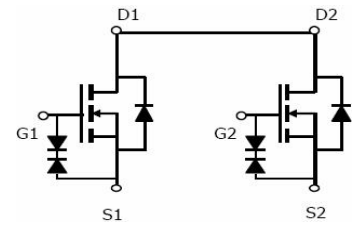


ATM2604KNSG

20V N-Channel Enhancement Mode MOSFET

Descriptions

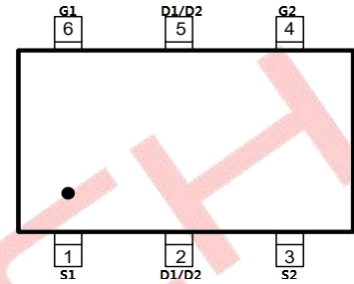
The ATM2604KNSG uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch or in PWM applications.



Schematic diagram

Features

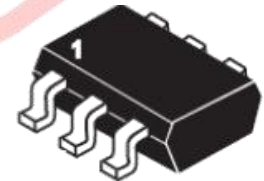
- $R_{DS(ON)} < 21m\ \Omega$ @ $V_{GS}=2.5V$
- $R_{DS(ON)} < 15m\ \Omega$ @ $V_{GS}=4.5V$
- High power and current handling capability
- Lead free product is acquired
- Surface mount package



pin Assignment

Applications

- PWM application
- Load switch



SOT23-6L top view

Absolute Maximum Ratings (Ta=25°C unless otherwise specified)

| Parameter | Symbol | Maximum | Units | |
|--|-----------------|-----------------|-------|------|
| Drain-Source Voltage | V_{DS} | 20 | V | |
| Gate-Source Voltage | V_{GS} | ± 8 | V | |
| Drain Current-Continuous | I_D | 5 | A | |
| Drain Current-Pulsed(Note 1) | I_{DM} | 30 | A | |
| Power Dissipation | P_D | 1.2 | W | |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | 150, -55 ~ +150 | °C | |
| Parameter | Symbol | Typ | Max | Unit |
| Maximum Junction-to-Ambient(Note 2) | $R_{\theta JA}$ | 64 | 83 | °C/W |

ATM2604KNSG

Electrical Characteristics (Ta=25°C unless otherwise specified)

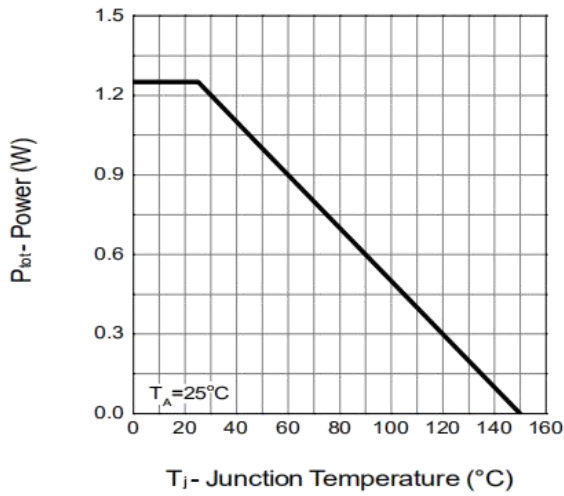
| Parameter | Symbo | Test Conditions | Min | Typ | Max | Unit |
|---|---------------------|---|-----|------|-----|------|
| Static Parameters | | | | | | |
| Drain-Source breakdown voltage | BV _{DSS} | ID=250uA, VGS=0V | 20 | - | - | V |
| Zero Gate voltage drain current | IDSS | VDS=16V, VGS=0V | - | - | 1 | uA |
| Gate-Body leakage current | IGSS | VDS=0V, VGS=±8V | - | - | ±10 | uA |
| Gate Threshold voltage(Note 3) | VGS(th) | VGS=VDS, ID=250uA | 0.4 | 0.7 | 1 | V |
| On state drain current | ID(ON) | VGS=4.5V, VDS=5V | 30 | - | - | A |
| Static Drain-source on-resistance(Note 3) | RDS(on) | VGS=4.5V, ID=5A | | 12 | 25 | mΩ |
| | | VGS=2.5V, ID=3A | | 15 | 35 | mΩ |
| Forward Transconductance(Note 3) | g _{FS} | VDS=5V, ID=5A | - | 31 | - | S |
| Diode Forward Voltage(Note 3) | V _{SD} | Is=1A, VGS=0V | - | 0.7 | 1.3 | V |
| Maximum Body-Diode Continuous Current(Note 2) | Is | | - | - | 2.5 | A |
| Dynamic Parameters | | | | | | |
| Input Capacitance(Note 4) | Ciss | VGS=0V, VDS=10V, f=1MHZ | - | 1120 | - | pF |
| Output capacitance(Note 4) | Coss | | - | 195 | - | pF |
| Reverse transfer capacitance(Note 4) | Crss | | - | 155 | - | pF |
| Gate resistance | R _g | VGS=0V, VDS=0V, f=1MHZ | - | 4.0 | - | Ω |
| Switching Parameters | | | | | | |
| Total Gate charge(Note 4) | Q _g | VGS=4.5V, VDS=10V, ID=5A | - | 16 | - | nC |
| Gate Source charge(Note 4) | Q _{gs} | | - | 1.7 | - | nC |
| Gate Drain charge(Note 4) | Q _{gd} | | - | 6.8 | - | nC |
| Turn-on delaytime(Note 4) | t _{D(on)} | VGS=5V, VDD=10V, RL=1.35 Ω, RGEN=3 Ω | - | 7.2 | - | ns |
| Turn-on rise time(Note 4) | t _r | | - | 11 | - | ns |
| Turn-off delaytime(Note 4) | t _{D(off)} | | - | 64 | - | ns |
| Turn-off fall time(Note 4) | t _f | | - | 32 | - | ns |
| Body Diode reverse recovery Time | t _{rr} | IF=5A, dI/dt=100A/us | - | 32 | - | ns |
| Body diode reverse recovery charge | Q _{rr} | IF=5A, dI/dt=100A/us | - | 12 | - | nC |

Notes:

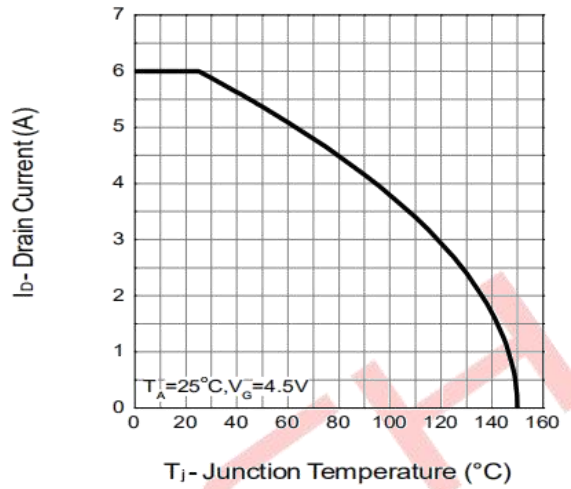
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Characteristics Curves

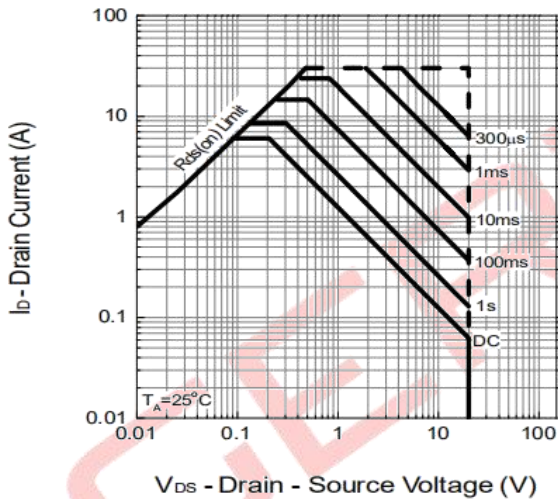
Power Dissipation



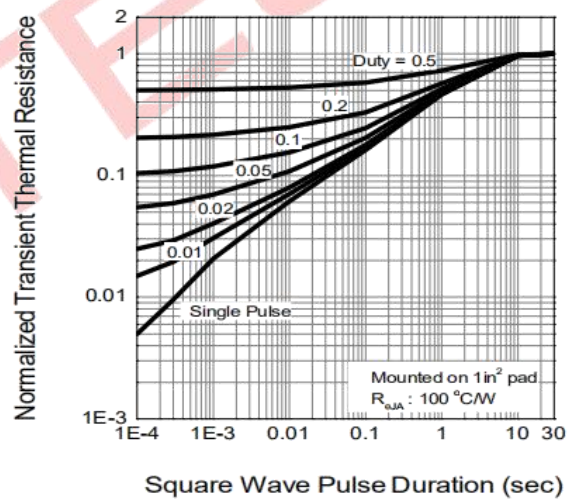
Drain Current



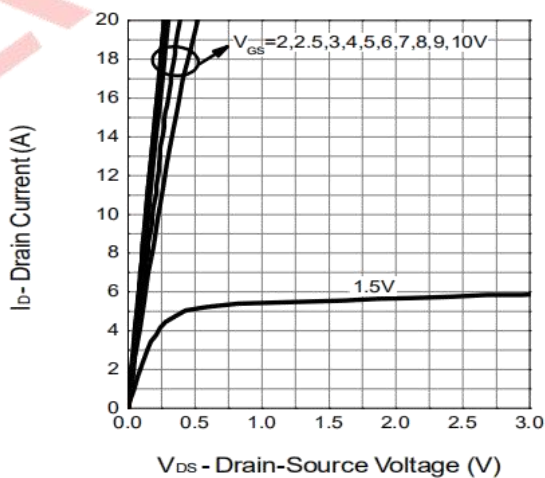
Safe Operation Area



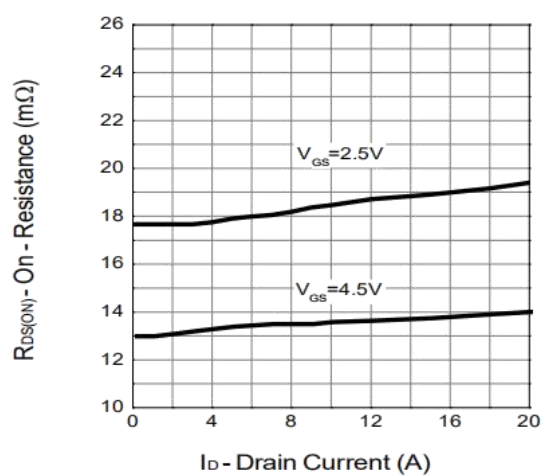
Thermal Transient Impedance



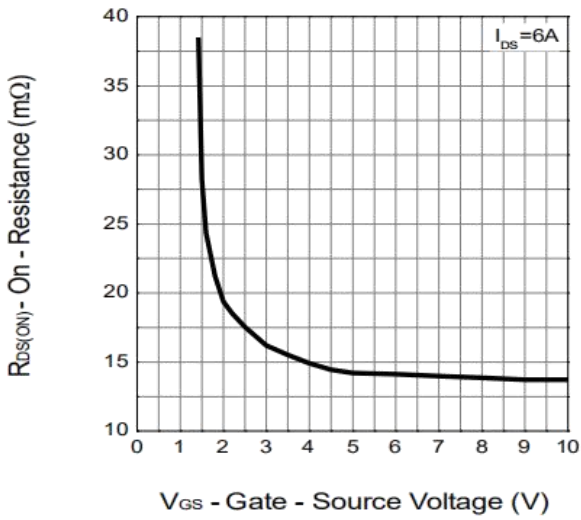
Output Characteristics



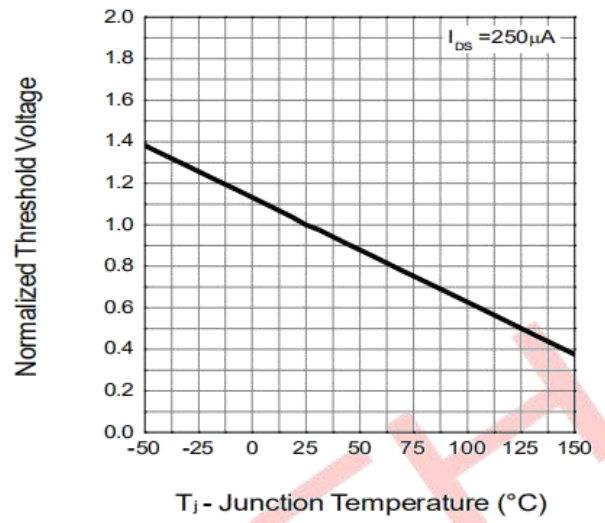
Drain-Source On Resistance



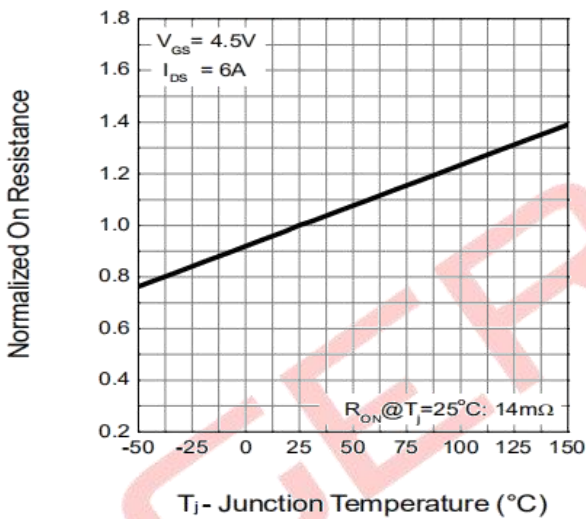
Gate-Source On Resistance



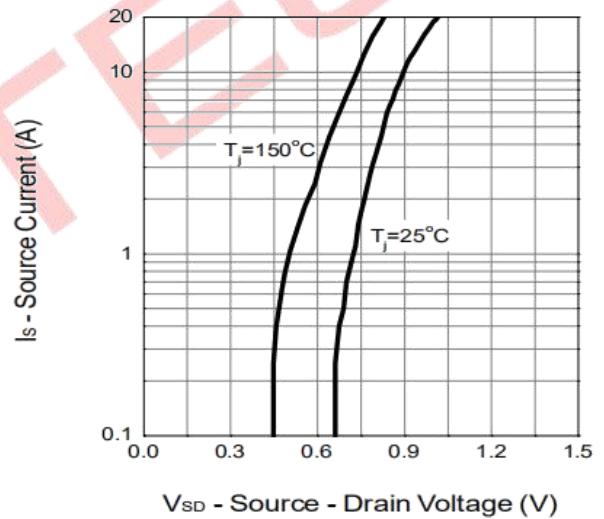
Gate Threshold Voltage



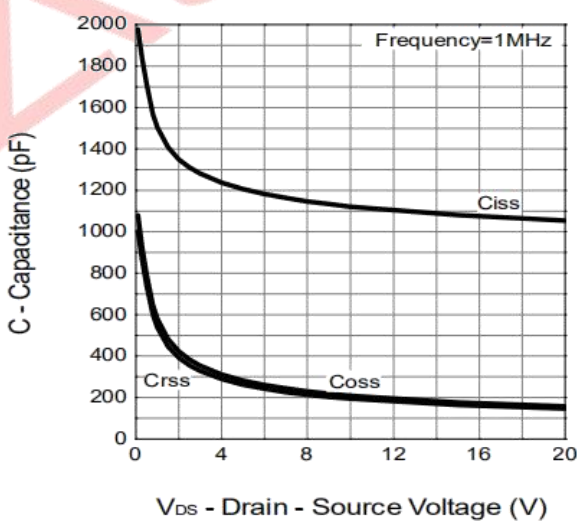
Drain-Source On Resistance



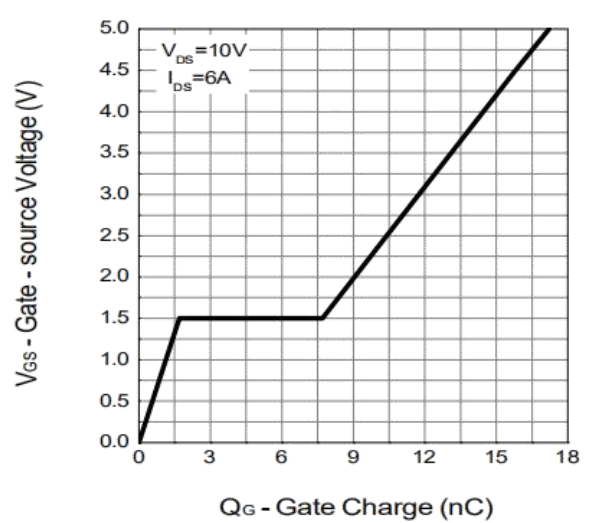
Source-Drain Diode Forward



Capacitance



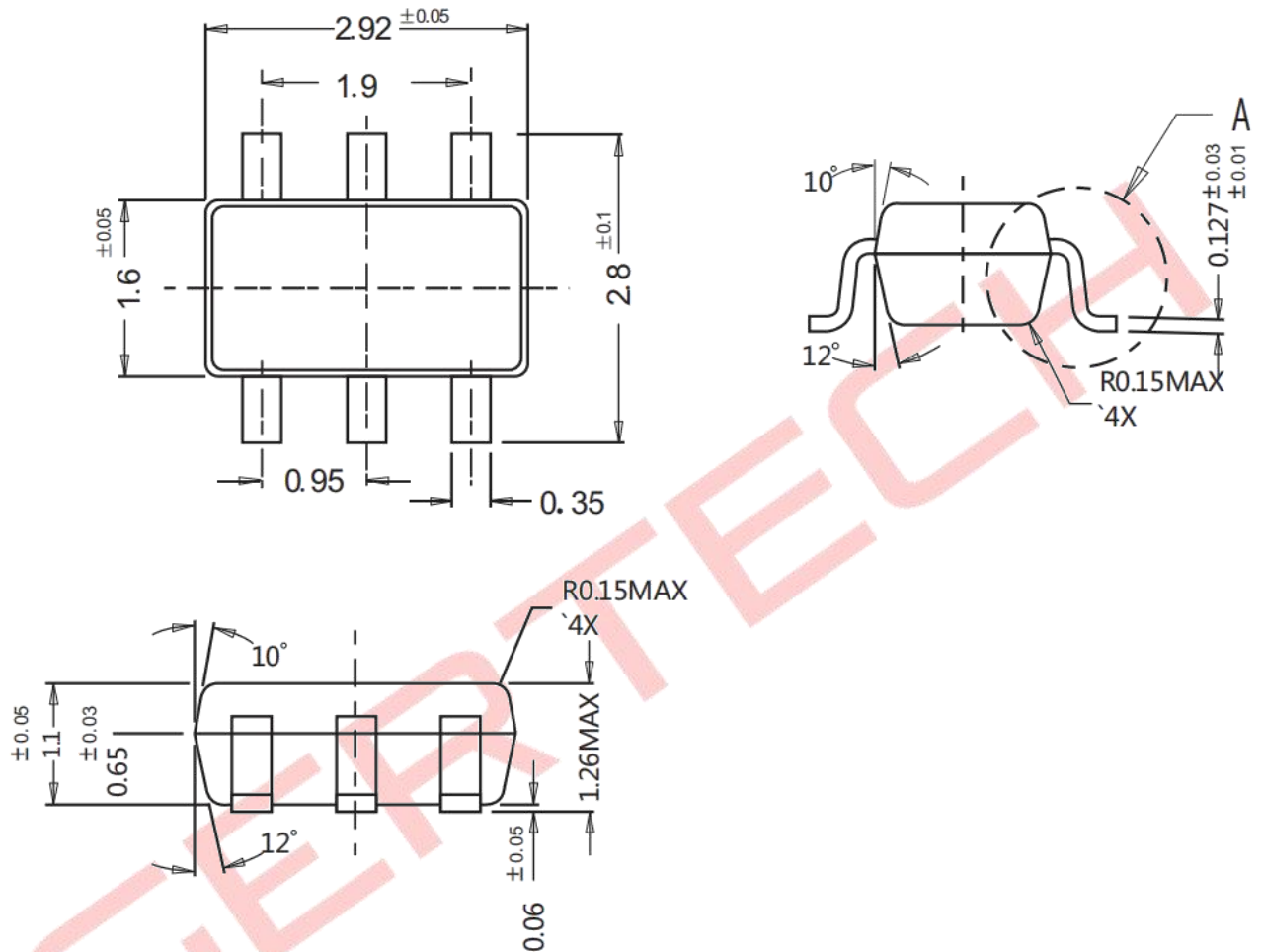
Gate Charge



ATM2604KNSG

Package outline

SOT23-6



Ordering information

| Device | Package | Marking | Shipping |
|-------------|---------|---------|--------------------------|
| ATM2604KNSG | SOT23-6 | 2604 | 3000PCS/Reel&Tape(7inch) |